

## Remarks

Reconsideration and the timely allowance of the pending claims, in view of the following remarks, are respectfully requested.

In the pending Office Action, the Examiner rejected claims 1-2 and 7-8, under 35 U.S.C. §102(b), as allegedly being anticipated by Fumiko '712; rejected claims 3-6 and 9-10, under 35 U.S.C. §103(a), as allegedly being unpatentable over Fumiko '712 in view of Sakaguchi '348.

By this Amendment, claims 1 and 4-9 have been amended for form and clarity and claims 2-3 and 10 have been cancelled. No new matter has been introduced. Accordingly, claims 1 and 4-9 are currently submitted for examination, of which claim 1 is the sole independent claim.

Applicants respectfully traverse the §102(b) and §103(a) rejections for the following reasons:

### I. Rejections Under §102(b) & §103(a).

As noted above, independent claim 1 positively recites, *inter alia*, irradiating ions or electrons upon the surface of the inspection region of said silicon oxide film . . . ***measuring said silicon islands within said silicon oxide film based upon accumulated said surface images***; and inspecting the internal state of said SOI wafer, wherein said ***etching is performed with an ion-beam having an acceleration voltage of 15 to 40keV, beam current greater than or equal to 3.6pA, and beam diameter greater than or equal to 18 nm***, and wherein said etching and said imaging of said surface image are performed at the same time.

Applicants submit that the claim features are amply supported and described by the embodiments disclosed throughout the written description. By way of illustration only, the disclosed embodiments provide a process in which etching and imaging of surface image of an SOI wafer sample are performed simultaneously, surface images are accumulated successively, and the internal state (*i.e.*, presence of silicon islands in an oxide layer) of the

sample is reconstructed based on the accumulated multiple images. By this process, it is possible to perform accurate analysis of fine texture such as silicon islands in the oxide film on an SOI wafer.

Applicants respectfully submit that, despite the Examiner's contentions, none of the asserted references, whether taken alone or in combination, suggest each and every element of claim 1 including, for example, the features identified above. In particular, the primary reference, Fumiko '712, merely discloses the formation of a recessed portion and the observation of the bottom face of the recessed portion or sectional face of the sample.

Indeed, the passages of Fumiko '712 cited by the Examiner (*i.e.*, par. [0029]-[0031]) merely describe the constitution of the FIB apparatus of FIG. 2 and the formation of the recessed portion by sputter etching via the ion beam with the acceleration energy of about 25 keV.

With this said, there is nothing in Fumiko '712 that suggests the accumulation of successive multiple images so as to reconstruct the three-dimensional structure of the sample. Nor is there anything in Fumiko '712 that suggests the claimed beam conditions, such as, beam current and diameter, for observing the silicon islands. As such, Fumiko '712 clearly fails to suggest *measuring said silicon islands within said silicon oxide film based upon accumulated said surface images*; and inspecting the internal state of said SOI wafer, wherein said *etching is performed with an ion-beam having an acceleration voltage of 15 to 40keV, beam current greater than or equal to 3.6pA, and beam diameter greater than or equal to 18 nm*, and wherein said etching and said imaging of said surface image are performed at the same time, as required by claim 1.

Applicants also submit that the remaining reference, Sakaguchi '348, is incapable of curing the deficiencies of Fumiko '712 noted above. Specifically, Sakaguchi '348 describes the preparation of silicon substrate via a floating zone (FZ) process, in order to obtain a virtually defect-free wafer. The defects controlled by Sakaguchi '348 are grown-in defects in the silicon single crystal that have no relation, whatsoever, with silicon islands in a silicon

oxide film. (See, Sakaguchi '348: par. [0055]). In other words, before forming the oxide film, silicon in the silicon wafer does not constitute a defect.

Moreover, with regard to FIGS. 2A to 2C of Sakaguchi '348, relied upon by the Examiner, these figures merely illustrate the formation process of a BOX layer. (See, Sakaguchi '348: par. [0051]-[0053]). As such, Sakaguchi '348 is silent with regard to controlling the silicon islands formed in the silicon oxide film.

Thus, for at least the aforementioned reasons, Applicants submit that claim 1 is neither anticipated by nor rendered obvious by the asserted references. As such, claim 1 is clearly patentable. And, because claims 4-9, depend from claim 1, claims 4-9 are also patentable at least by virtue of dependency as well as for their additional recitations.

Accordingly, the immediate withdrawal of the §102(b) and §103(a) rejections is respectfully requested.

### Conclusion

Having addressed each of the foregoing rejections, it is respectfully submitted that a full and complete response has been made to the outstanding Office Action and, as such, the application is in condition for allowance. Notice to that effect is respectfully requested.


If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

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